SECRET

13 May 1963

MEMORANDUM FOR: Assistant for Plans and Development

THROUGH : Executive Secretary, TDC

SUBJECT : Staff Study - Contract [redacted] for Gamma I Printer Rectifier 25X1

PROBLEM:

1. Additional funds are needed to complete above subject contract.

FACTORS BEARING ON THE PROBLEM:

2. Facts.

a. On 29 June 1962 a contract was awarded to [redacted] 25X1
25X1 [redacted] to conduct a design study, Gamma I and Gamma II printers, estimated
25X1 cost [redacted]

b. On 30 June 1962 a contract was awarded to [redacted] 25X1
25X1 [redacted] to develop and build the rectifiers as a follow on to (a) above; funds
25X1 allotted at the time [redacted]

c. T.O. #5 has been completed and evaluated. The Gamma II requirement was deleted as per Memorandum titled Reorientation of Referenced Contract, dated 7 January 1963. The decision was later made to develop the Gamma I as
25X1 modifications to the original [redacted] rectifier was not completely satisfactory for the present input materials from either rectification or resolution standpoints.

d. After several technical sessions with the [redacted] engineers, Army Map 25X1
Service personnel and the technical monitor, a finalized work statement has been
25X1 concluded. It appears in [redacted] Proposal 9051.03 dated 18 April 1963.

e. The instrument has sufficient flexibility as well as doubled resolution, 80 l/mm guaranteed and a possibility of 100 l/mm, to produce a high quality rectified print and will also meet any normal operational deviations such as altitude variation and vehicle orientation.

f. There is an additional fund requirement of approximately [redacted] 25X1
to complete the funding of Contract [redacted] which Army, CINCARADA, will 25X1
match to complete funding for the original instrument.

DISCUSSION:

3. It was known from the early stages of the negotiations that the funds allotted were inadequate [redacted] letter dated 10 May 1962). It was indicated in the original proposal that the first unit would cost [redacted] (estimated), NPIC Proposal No. 116/62, [redacted] Proposal No. 3014, dated 26 April 1962. The cost was later reduced to [redacted] A final reestimation of cost was to be made upon conclusion of T.O.#5.

4. At one time there was the probability that the Air Force would purchase at least three of the instruments therefore reducing the engineering cost to each purchaser. This would have resulted in the return of some of the funds already committed. However, the Air Force people now find that they will be unable to participate in a joint procurement program and all engineering costs are being assigned to the prototype.

CONCLUSION:

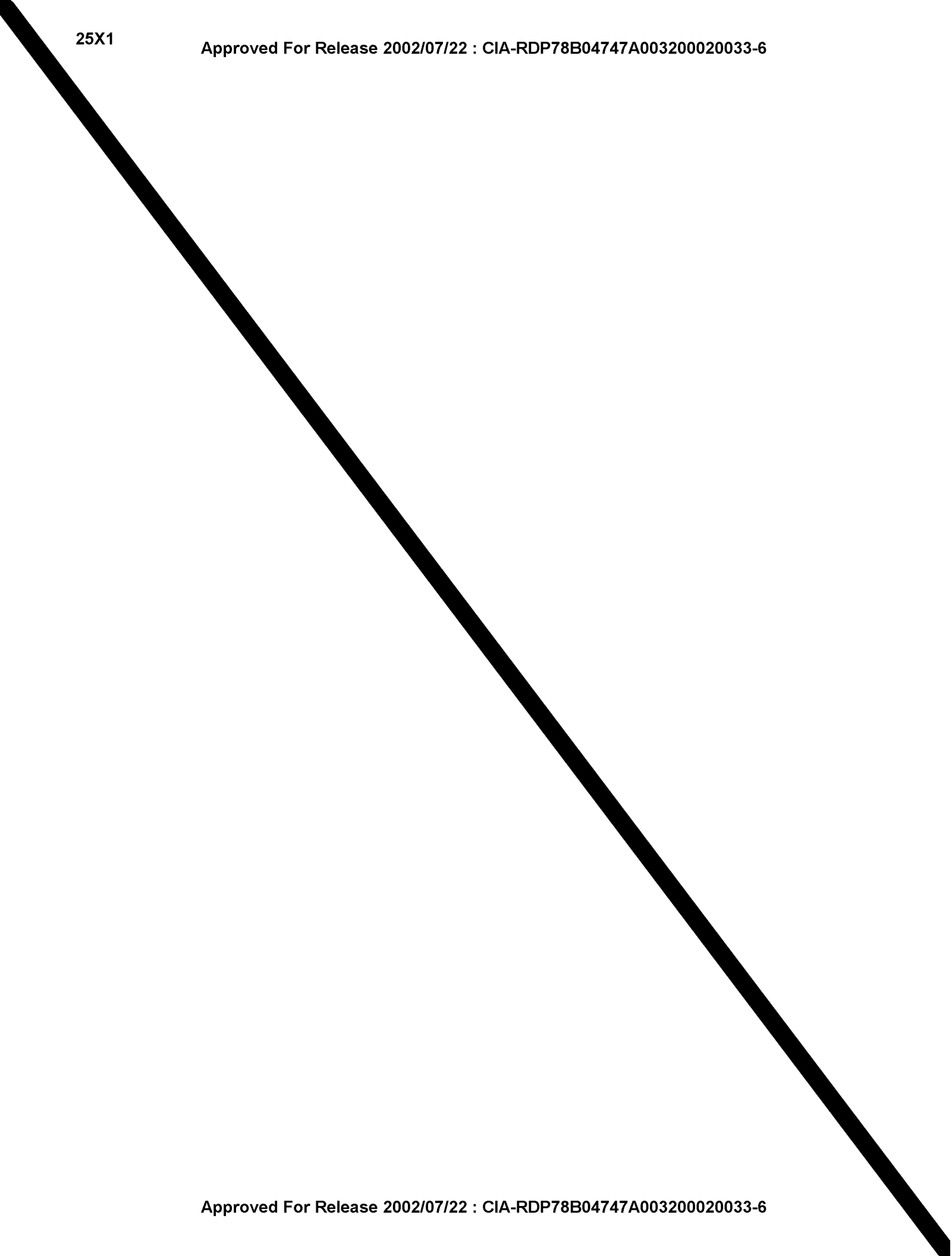
5. Since it was agreed originally that NPIC would have an interest in developing a high quality rectifier printer this final investment is appropriate.

RECOMMENDATIONS:

6. It is recommended that the additional [redacted] be approved and that construction of the printer be continued as stated in [redacted] Proposal 9051.03, dated 18 April 1963.

[redacted]

Development Branch, P&DS



Approved For Release 2002/07/22 : CIA-RDP78B04747A003200020033-6

25X1

TO:

DATE: 8 April 63

REGISTER NUMBER: 187/63

Please sign and return immediately as this receipt is necessary to close our records.

CONTROL, LOG OR FILE NO.	CLAS	NO. CYS	DESCRIPTION OF DOCUMENT (Type, File Reference, Unclassified Subject or short title, number of pages, copy number, etc.)	DATE OF DOCUMENT
n/a	SH	1	Supplement to the Design Study, Gamma I & II Printers, 17 Aug 62, 4 pp.	25 Mar 63
/ / / / / / / /	/ /	/ /	/ / / / Nothing Follows / / / / / / / / / / / / / / / / / /	/ / / / / /

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☐ RECEIPT OF DOCUMENTS ACKNOWLEDGED ☐ DOCUMENTS HAVE NOT BEEN RECEIVED

DATE	TIME	PRINTED NAME	SIGNATURE

25X1

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* GPO : 1962 O—636277

X1

TO:	DATE	REGISTER NUMBER
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SUPPLEMENT TO THE DESIGN STUDY

GAMMA I & II PRINTERS, 17 AUGUST 1962

25 March 1963

This supplement to the GAMMA I & II Design Study represents a modification and expansion of the "Rectifier output specification" (Table 2, page 4) of the GAMMA I & II Design Study.

The modification to the Design Parameters are as follows:

1. All references to GAMMA II are deleted.

2. The "rectifier output specifications shall now read:

FORMAT SIZE- Full format (not segmented) on 9 1/2 film. Easel will accomodate full format with ± 5 degreese roll.

OPTIMUM OUTPUT SCALE- 1.875 magnification at center of format.

AUXILLIARY DATA TO BE-RECORDED The data block contained on the input format shall be printed to the same scale as the format image. The exact location and dimensions of this data block will be provided by the contracting agency.

EARTH CURVATURE- Shall be compensated for by an adjustable radius easel with range sufficient to permit the easel radius to change continuously from ~~24~~ 47 feet to ~~78~~ 126 feet. The adjustments shall be calibrated for convient setting.

FOCUS CAM- A three demensional fine focus lens cam shall be provided which will adjust the lens to provide the required lens conjugated for optimum focus thru the full sweep range and compensate for the change in projection distance resulting from the adjustable easel.

The cam shall cover the full range of earth curvature variables.

PRIMARY PITCH RANGE- + 10 degreese to + 20 degrees

TOTAL PITCH RANGE- - 5 degrees to + 20 degrees. The equipment will have the physical capability of accomodating this total pitch range, but the resolution requirements (80 to 50 lines/mm) and accuracy requirements (0.010 inch) will apply only within the primary pitch range (+ 10° to + 20°).

ROLL- Easel length and input format will be based on ± 5 degrees roll to produce the full print, however, fiducial offset will accomodate ± 10 degrees.

RESOLUTION- The instrument will resolve a minimum of 80 lines per millimeter across the width of the format at center and no less than 50 lines per millimeter at any point on the format. These values are referred to the negative scale and printed on duplicating film (5427). The resolving capability shall apply for any setting of the easel tilt from + 10° to + 20° combined with any setting of the easel curvature is set at one of the three calibrated positions which will be 70', 98', 126'. The design goal is to maintain this resolution over the total physical tilt range from - 5° to + 20° and for all settings of the easles curvature.

ACCURACY- The accuracy of the output shall be 0.010 inches and shall approach a design goal of 0.005 inches with no error greater than 0.010 inches. The accuracy of the printer shall be tested with a constructed grid to duplicate taking case pitched panoramic distortions

as well as earth curvature displacements. The projection of the grid thru the rectifier with the proper setting shall be measured and compared with with the true rectified positions.

FILM SUPPORT-(INPUT FORMAT) Rollers or other suitable means shall be provided to support the input film in its proper plane at the exposure point thru the entire sweep.

LIGHT SOURCE- The light source and condensing system shall be designed to provide proper illumination at the input negative to allow exposure times to be in the optimum range (10-60 seconds) when printing from negatives with density ranges varying from .8 to 1.4. The lamp head shall be provided with convient adjustments to allow the operator to align the lamp filament in its proper relationship to the condensing lens systems. A method or means (possibly in the form of a small screen which would snap onto the bottom of the condensing lens) shall be provided to assist the operator in this alignment.

ORIENTATION OF-INPUT FILM A means of aligning the negative fiducial coincident with that of the rectifier optical axis shall be provided. A positive calibrated means shall be provided for displacing this reference mark by ± 10° from the rectifier optical axis.

VARIABLE MAGNIFICATION- The equipment shall be designed to provide a means for displacing the easel from its optimum focus position by a

measured amount sufficient to alter the output scale by ± 1%. This displacement may be either in the plus or minus direction from the optimum focus position; however, the resolution specified under "Resolution" shall apply only at the optimum focus position.

NEGATIVE TRANSPORT- Manual. The film transport system (i.e. rollers, platen etc.,) will be designed to prevent damage (i. e. scratches, abrasions) to the 70 mm input film.

COPY TRANSPORT- Automatic. The film transport system will be designed to prevent damage to the 9 1/2 output film.

EXPOSURE CONTROL- A automatic means shall be provided for varying the illumination during a sweep to compensate for the changing projection distance.

SLIDE RULE COMPUTER- A means shall be provided to assist the operator in determining displacements, angles and other required instrument settings.

Part I

12 March 1963

SUPPLEMENT TO THE DESIGN STUDY

GAMMA I & II PRINTERS, 17 AUGUST 1962

This supplement to the Gamma I & II Design Study represents a modification and expansion of the "Rectifier Output Specifications" (Table 2, page 4) of the Gamma I & II Design Study.

The costs of each of the items listed in the original "Output Specifications" have been modified to reflect the changes in technical scope and the changes in pay scales, overhead charges, and G & A rates which have occurred in the interim between submittal of the Cost Proposal (on 24 August 1962) and the present.

The costs of the herein proposed adjustable output easel, the associated focus cam, and the slide rule calculator (none of which were included in the original proposal) have been listed separately and are included in the cost estimate package which accompanies this supplement.

The proposed modifications to the Design Parameters are as follows:

1. All references to Gamma II are deleted.

2. The "Rectifier Output Specifications" shall now read:

Format Size	Full format (not segmented) on 9½-inch film
Output Scale	1.875X magnification
Auxilliary data to be recorded	The data block contained on the input format shall be printed to the same scale as is the format image.
Earth Curvature	Shall be compensated for by an adjustable radius easel. Each discrete easel radius shall require a fine-focus lens cam. Any discrepancy between a curvature and its specified easel radius will result in a degradation of the resolution capability which is specified in "resolution design goal" (above).

Primary Tilt	15°
Primary Tilt Range	$\pm 5^{\circ}$
Total Tilt	-5° to -20°. The equipment will have the physical capability of accomodating this total tilt range, but the resolution capability (30 - 50 l/mm) specified in "Resolution Design Goal" (above) will apply only to the Primary Tilt (15°) and the Primary Tilt Range ($\pm 5^{\circ}$) conditions.
Roll	$\pm 5^{\circ}$
Printer Accuracy	The projection of a grid that has been constructed to duplicate those taking case panoramic distortions described in this document, shall approach a design goal accuracy of 0.005 inch with no error greater than 0.010 inch in the location of projected points relative to actual grid points.
Variable Magrification	The equipment shall have the capability of printing 10 to 12 consecutive frames to the same scale; however, the resolution specified in "Resolution Design Goal" shall apply only at the optimum focus displacenent.
Negative Transport	Manual
Copy Transport	Automatic
Exposure Control	Excluded
Variable Pitch	As specified under "Total Pitch"
Slide Rule Computer	To be provided. This hand computer will assist the operator in determining displacement, angles and other required instrument settings.

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